Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization &/or Mitigation Measures

This chapter describes the environmental resources of the project areas and how the resources would be affected by the proposed project. This chapter also discusses the potential environmental impacts of the proposed project and recommended avoidance and minimization measures. This chapter discusses and addresses issues of concern pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

Based on the results of technical studies that examined impacts to environmental resources, Caltrans has determined that the appropriate level of CEQA document for this project is an Initial Study. The Federal Highway Administration (FHWA) recommended that the appropriate level of NEPA document is an Environmental Assessment.

The word "significance" has been used in this document as a CEQA term. The proposed project would not significantly affect the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The mitigation measures identified and described in this document for the proposed project will minimize the impacts to the environment to a level below significance.

2.1. Human Environment

2.1.1. LAND USE

Affected Environment/Existing Uses

The proposed project is located along a 3.7 km (six-mile stretch) of SR 12 that is also known as Jameson Canyon Road. This portion of SR 12 runs in the east – west direction. At the west end of Jameson Canyon Road is the SRs 12 and 29 intersection, which is

within the project limits. At the east end of Jameson Canyon Road is the I-680/I-80/SR 12 interchange, which is outside the project limits.

This portion of SR 12 is a rural highway with steep hills rising on either side from an elevation of 30.48 m (100 feet), at each end, to over 243.84 m (800 feet) from 1.609 km (one mile) from north and south of the road, at the Napa-Solano county line. The land uses north and south of Jameson Canyon Road are related to agriculture—grazing lands and vineyards.

Surrounding the SRs 29/12 intersection, are industrial parks in each of the four quadrants of the intersection. To the southeast of the intersection are two privately owned, open-to-the-public golf courses. West of the SRs 29/12 intersection, Airport Boulevard begins and terminates after 1.29 km (0.8 miles) at the Napa County Airport, which is a general aviation facility. A tasting room and garden at the SRs 12/29 intersection were closed in approximately 2005, as was a nearby childcare facility.

Surrounding the I-680/I-80/SR 12 interchange are a patchwork of industrial and high-density commercial land uses that are interspersed with open spaces.

Future Land Uses

The land uses along SR 12 are zoned and projected to remain rural, agricultural, and unchanged.

The land uses at the intersection of SRs 29/12, which is in an unincorporated area known as the South Napa County Business Parks or the Napa Airport Industrial planning area, is projected to become a major regional employment center with industrial and low-density commercial uses. Very low-density residential areas are projected a quarter-mile to the northeast.

The land uses surrounding the I-680/I-80/SR 12 interchange are projected to remain the same. But medium density residential land uses are planned a one-half mile or more from the interchange.

Land uses for the project study area are guided by the Napa County, Solano County and City of Fairfield General Plans. The Napa County General Plan dates to 1993, although its land use element has been frequently updated. A Draft General Plan was released in February 2007. The Fairfield General Plan was released approximately in 2000. The Solano County General Plan dates from 1980 and several elements have been updated since that date.

Consistency with Plans

Transportation Plans

- **Regional Transportation Plan:** The widening of this portion of SR 12 is listed in the Metropolitan Transportation Commission's *Transportation Plan for the San Francisco Bay Area* (February 2005) as Reference Numbers 94074 and 94152. The conversion of the SRs 29/12 intersection to an interchange is listed as Reference Number 94075. Consequently, the proposed project is consistent with the most recent Regional Transportation Plan.
- **Transportation Improvement Program:** The widening of SR 12, Jameson Canyon Road, is listed in the Transportation Improvement Program (TIP), which was adopted by the Metropolitan Transportation Commission on July 12, 2006, and the Federal Highway Administration and Federal Transit Adminstration on October 2, 2006, as TIP ID NAP010008. The conversion of the SRs 29/12 intersection to an interchange was amended into the TIP as TIP ID NAP010001. So, the proposed project is consistent with the TIP.
- **Traffic Congestion Relief Program (TCRP)**: The Transportation Congestion Relief Program was a five-year state transportation investment plan passed by the California Legislature and signed into law by Governor Gray Davis in 2000. This plan currently provides funding for environmental and design work for this proposed project.
- **Corridor Mobility Improvement Account (CMIA):** Voters in the California passed Proposition 1B—the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006—on November 7, 2006. This Bond Act deposits $4.5 billion in a Corridor Mobility Improvement Account. On March 15, 2007, the California Transportation Commission adopted a program of projects to be funded from the CMIA. The program includes $73,990,000 for first phase of the widening of SR 12 Jameson Canyon Road.
- **Solano Comprehensive Transportation Plan, June 2005:** This Plan envisions, directs, and prioritizes the transportation needs for Solano County through the year 2030. The Arterials, Highways, and Freeways Element of this Plan lists needs on routes of regional significance. One of these needs is the improvement of SR 12 West from I-80 to SR 29. The Plan discusses the improvements to SR 12 as a widening from two to four lanes and the provision of a median to separate westbound and eastbound traffic.
- **Napa County Transportation Planning Agency Strategic Transportation Plan (1999)**: This Plan includes SR 12 from SR 29 to the Solano County line, and the SR 12/29 intersection in its East/West Corridor 2. One of the Corridor 2 objectives is:

Enhance road and intersection capacities to accommodate future travel demand for commuter, visitor, and freight related trips. To accomplish this objective, the Plan proposes the widening of SR 12 to four lanes, and the improvement of the SRs 12/29/Airport Boulevard intersection. Thus, the proposed project is consistent with the NCTPA Strategic Transportation Plan.

- **Napa Countywide Bicycle Plan (2003):** The Napa Countywide Bicycle Plan (NCBP) is a comprehensive plan that includes goals, policies, objectives, actions, design standards, and financial strategies for the development of the Napa County bikeway network. The Jameson Canyon Road is identified as a 5.6 mile long, Class I bike path (exclusive right-of-way of pedestrians and bicyclists)—on either the existing water easement or the Union Pacific Railroad right-of-way—that connects to the Solano County bikeway system. This project will provide a Class II bike lane (a lane within the paved area of the roadway reserved for bicycle-only use with certain exceptions for vehicles making turns and entering/exiting driveways) along the shoulder from Redtop Road to Kelly Road. To provide safe passage across the SRs 29/12 interchange for westbound bicyclists heading beyond Airport Boulevard, bicyclists will cross SR 12 at Kelly Road to a two-way, Class I bike path that is an upgrade of the Class II bike lane adjacent to eastbound SR 12. This Class I bike path will end beyond Airport Boulevard at Devlin Road. The proposed project will improve upon existing conditions for bicyclists and pedestrians that choose to ride or walk. The proposed project does not impede the facility in the NCBP.
- **Solano Countywide Bicycle Plan (2004):** The Solano Countywide Bicycle Plan (SCBP) is a comprehensive plan that includes goals, policies, objectives, actions, design standards, and financial strategies for the development of an integrated system of bikeway facilities within Solano County. The Jameson Canyon Road, is identified as a 3-mile long bike route, connecting the Solano County bike network to Napa County. This bike connector is identified either as a Class I Bike Path along the California Northern Railway and/or utility right-of-way or as a Class II Bike Lane along the shoulders of SR 12. To accomplish this objective the proposed project will install a Class II Bike Lane from Redtop Road to Kelly Road. Hence, the proposed project is consistent with the SCBP and does not impede the proposed SCBP facility.
- **Bay Area Ridge Trail:** The Bay Area Ridge Trail will ultimately be a 500+ mile trail encircling the San Francisco Bay along ridge tops. It is open to hikers, mountain bicyclists, equestrians, and outdoor enthusiasts. There are established and dedicated portions of this trail to the north and south of SR 12. To connect the portions of this trail that are to the north and south of SR 12, the Bay Area Ridge Trail Council, which plans, acquires, builds, maintains, and promotes the trail, envisions a crossing

below SR 12 through a culvert. The inclusion of the culvert undercrossing in the proposed project is being studied and considered. Portions of the trail beyond SR12 would have to be a separate project with its own environmental clearance and permits. This project will not preclude the future development of a Ridge Trail crossing at SR 12; hence it is consistent with the Ridge Trail Plan.

- **The San Francisco Bay Trail Plan (1989):** The Bay Trail Plan (Plan), adopted by the Association of Bay Area Governments (ABAG) in July 1989, includes a proposed alignment; a set of policies to guide the future selection, design and implementation of routes; and strategies for implementation and financing for the development of the San Francisco Bay Trail (Bay Trail). The Bay Trail is a bicycle and pedestrian trail in the San Francisco Bay Area that is intended eventually to be a continuous 400 miles network of trails that will encircle San Francisco Bay and San Pablo Bay. The Plan shows a future Bay Trail segment, along railroad tracks, west of the project limits. This project, will improve upon the existing bike route connectors in Solano and Napa Counties along SR 12, thus improving cyclist access to the future Bay Trail segment. Thus, the project is consistent with the Plan.

Habitat Conservation Plans

- **(Draft) Solano Multi-Species Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP):** The HCP/NCCP's area consists of all of Solano County as well as 7,670 acres of Yolo County. The HCP/NCCP covers the protection of seventy-seven species throughout the Plan's area. The SR 12 Jameson Canyon Road is within an area of Solano County that is considered the Inner Coast Range. Among the species to be protected in this area are California red-legged frog, Swainson's hawk, and burrowing owls. As the federal action agency for the proposed project, Caltrans may use the draft HCP/NCCP as guidelines for assessing the effects of proposed actions, but is not legally required to comply with the measures identified in the HCP/NCCP.

General and Community Plans

- **(Draft) Napa County General Plan (February 16, 2007):** The Napa County General Plan is being updated. Under the Circulation Element is Policy CIR-2.3: *The County seeks to provide a roadway system that maintains current roadway capacities in most locations, and is both safe and efficient in terms of providing local access. The following...improvements...will be implemented over time to the extent that improvements continue to enjoy political support and funding becomes available:*

- *Widen Jameson Canyon Road (Route 12) by adding one additional vehicular travel lane and room for a class II bike lane in each direction that may also allow equestrian use. Construct a safety barrier in the centerline, straighten unsafe curves, lower the grade where possible, install turn lanes for safety to allow for parcel access as appropriate, and install a Ridge Trail crossing for pedestrian, equestrian and bicycle use.*
- *Construct an interchange at the intersection of State Route 12, Airport Boulevard and State Route 29 within the most efficient footprint, including any necessary apurtenant facilities.*

The proposed project's concept is consistent with the (Draft) Napa County General Plan.

Solano County General Plan: The Solano County Land Use and Circulation Element was last amended in December 2004. The goal, objectives, and policies of this element are of a general nature and make no references to improvements or specific projects such as the widening of SR 12 Jameson Canyon Road. Instead, the Land Use and Circulation Element references the Solano Comprehensive Transportation Plan, which, as discussed previously, envisions SR 12 as a four lane facility.

Elections

- **Napa County Measure H**: Measure H, the countywide half-cent transportation sales tax was rejected by voters in June 2006. The sales tax would have provided $150 million for the SR 12 Jameson Canyon Road project, the SR 29 and SR12/Airport Boulevard interchange, and a southbound flyover from SR 221/Soscol Avenue to SR 29 east of the Butler bridge. The reasons for the rejection of this measure are a combination of factors that could include opposition to taxes, concerns about growth, and dissatisfaction with the priority of projects that would have been funded by the sales tax.

Coastal Zone and Wild and Scenic Rivers

The entire project area of SR 12 Jameson Canyon Road and the SRs 29/12 intersection is outside of coastal zones. There are no wild and scenic rivers that traverse the project area.

Parks and Recreation
There are no publicly-owned parks, recreation areas, or wildlife or waterfowl refuges that border or are near the project area. There are also no historic sites.

Two golf courses in the vicinity—the 18-hole, public-access, Eagle Vines Golf Club, which is 0.40 km (0.25 miles) east of the SR 12/29 intersection, and the 27-hole, public access, Chardonnay Golf Club, which is just over 0.80 km (one half-mile) from the SR 12/29 intersection at its closest point—are privately owned.

2.1.2.GROWTH

Regulatory Settings: The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment..."

Affected Environment – Napa and Solano Counties are located between two of the most rapidly growing regions: the San Francisco Bay and Sacramento metropolitan areas. SR 12 is an important east-west highway that traverses San Joaquin, Sacramento, Solano, Napa, and Sonoma Counties and carries interregional as well as local traffic. It connects with I-5 (in San Joaquin County), I-80 (in Solano County), SR 29 (in Napa County), and U. S. Route 101 (in Sonoma County).

Solano County, its cities and unincorporated areas, continue to serve the role of the affordable bedroom communities for commuters driving to Napa County and to the East Bay employment centers. SR 12 Jameson Canyon Road provides the only direct link for commuters traveling to Napa and Sonoma Counties from mid-county and eastern Solano county cities such as Fairfield, Suisun City, Vacaville and Rio Vista. Relatively

affordable housing and flat topography facilitate residential housing growth in Solano County, as do improvements to I-80, I-680, and the Benicia-Martinez and Carquinez bridges. As more desirable jobs are created in Napa County, motorists who live in Solano County are using this portion of SR 12 to commute to work in Napa County. As a result, traffic volumes, congestion, and travel times have increased on this route. SR 29 is also an important highway that traverses Solano, Napa, and Lake Counties, connecting the major cities of Napa County and carries recreationally and agriculturally related traffic throughout the region.

In the 2005-2030 forecast period, the SR 29 corridor from Napa south to the Solano County line, including American Canyon and the Napa Airport industrial area, will dominate the county's growth. In the unincorporated Airport Industrial area, growth will be exclusively commercial and industrial, and no residential housing construction is planned. Solano County has a considerable jobs/housing imbalance with relatively few in-county jobs per household. Although job growth is projected to outpace the increase in households through 2030, a jobs/housing imbalance will persist.

Employment Projections and Jobs/Housing Balance

According to U. S. Bureau of Labor Statistics, Solano County's unemployment rate in November 2007 was 5.4%, which was slightly lower than the State of California at 5.6% during the same time period. ABAG's population and job growth forecast for 2005-2030 indicates that the number of jobs in the County will increase at a slightly higher rate than the number of households (Table 2.1.2.1). However, MTC's findings—in Table 2.1.2.2—suggest that the County's job deficit will continue to increase during the same period of time, thus resulting in an increase in the number of residents commuting from Solano County to nearby counties with jobs surpluses.

According to the Napa County Chamber of Commerce, Napa County's labor force is 54.4% of its population, and has remained fairly steady since 2002. The County's unemployment rate (4.7%) is lower than the unemployment rate for the State of California (5.6%) *(U. S. Bureau of Labor Statistics*, November 2007). ABAG's 2005-2030 forecast (Table 2.1.2.1) indicates that the number of households will increase at a slightly higher rate than the number of jobs in the county. In addition, MTC's findings—in Table 2.1.2.2, show a job surplus for the county during the same period of time. These findings could indicate an increase in the number of commuters traveling from Solano County into Napa County.

Table 2.1.2.1
Population, Housing and Employment Growth in the Greater Project Region: 2005-2030

	Population			Households			Employment (Jobs)		
Geographic Area	2005	2030	% change	2005	2030	% change	2005	2030	% change
Napa County	134,100	153,400	14	49,290	57,430	17	72,150	91,920	27
Napa	80,300	91,500	14	29,970	34,970	17	36,150	45,510	26
American Canyon	14,300	17,200	20	4,740	6,840	44	2,520	7,930	215
Airport industrial zone	0	0	0	0	0	0	3,810	7,420	95
Solano County	423,800	581,800	37	141,100	193,840	37	148,640	217,910	47
Fairfield	106,600	147,500	38	34,490	47,850	39	49,960	74,120	48
Suisun City	28,500	38,600	35	8,760	11,770	34	4,060	6,890	70
Vacaville	97,500	127,100	30	31,350	41,350	32	30,350	45,920	51

Source: ABAG

Table 2.1.2.2
Job Balance by County - Surplus (Deficit)

Location	1990	2000	2010	2020
San Francisco	179,426	184,407	185,205	206,992
San Mateo	(32,365)	(14,704)	(21,419)	(14,995)
Santa Clara	73,180	130,325	165,502	176,790
Alameda	(3,711)	23,515	26,615	41,655
Contra Costa	(78,010)	(98,613)	(95,938)	(94,953)
Solano	(37,620)	(39,109)	(51,285)	(76,056)
Napa	(3,406)	135	7,749	10,624
Sonoma	(24,081)	(19,745)	(25,604)	(18,295)
Marin	(19,329)	(6,053)	(5,675)	(3,980)
Total Bay Area	**54,084**	**160,158**	**185,150**	**227,782**

Source: Metropolitan Transportation Commission, September 1998.

2.1.3. FARMLANDS/AGRICULTURAL LANDS

Regulatory Setting - The National Environmental Policy Act (NEPA) and the Farmland Protection Policy Act (FPPA, 7 USC 4201-4209; and its regulations, 7 CFR Ch. VI Part 658 require federal agencies, such as FHWA, and the Department as assigned, to coordinate with the Natural Resources Conservation Service (NRCS) if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

The California Environmental Quality Act requires the review of projects that would convert Williamson Act contract land to non-agricultural uses. The main purposes of the Williamson Act of 1965 are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to deter the early conversion of agricultural and open space lands to other uses. According to CEQA guidelines, any farmland under this Act shall be evaluated for proposed future land use in coordination with the California Department of Conservation (CDC).

Affected Environment – To widen the highway from two to four lanes and install a median barrier, the project will require land acqusition from private owners along SR 12. The nature of the right of way acquisitions is in the form of narrow parcel strips—slivers—along SR 12 within the project limits.

The primary land use along SR 12, within the project limits, is agricultural with 90% of the lands either rangelands or vineyards (Table 2.1.3.1). The Solano County segment of the project traverses rangeland and very-low density residential housing. The Napa County segment passes through rangeland and agricultural vineyards with the remainder low-density residential, urban open land use (such as golf courses), and industrial parks in the vicinity of the proposed SRs 29/12 interchange at the western terminus of the project.

Table 2.1.3.1
Land Use Designation Along Project Area

(Source: ABAG 2000)

Land Use	Solano (Miles)	Percent of Total	Napa (Miles)	Percent of Total	Napa + Solano Total Miles	Percent of Total
Rangeland	2.50	43%	1.40	24%	3.90	67%
Residential	0.38	6%	0.04	1%	0.42	7%
Agriculture	0.00	0%	1.33	23%	1.33	23%
Urban Industrial	0.00	0%	0.08	1%	0.08	1%
Urban Open	0.00	0%	0.12	2%	0.12	2%
Total	**2.88**	**49%**	**2.97**	**51%**	**5.85**	**100%**

Table 2.1.3.2
Potentially Number of Affected Parcels for SR 12 Road Widening and SRs 29/12 Interchange Build Alternative Options

Source: Caltrans Right of Way Datasheets

	Total Number of Potentially Affected Parcels		
	Solano	Napa	Total
SR 12 Road Widening	15	17	**32**
Tight Diamond Alternative	0	34	**34**
Single Point Alternative	0	34	**34**

Table 2.1.3.3
Potentially Affected Acres for SR 12 Road Widening and SRs 29/12 Interchange Build Alternative Options

Source: Caltrans Right of Way Datasheets

	Right-of-Way Acquisition			Utility Easement		
	Solano	Napa	Total	Solano	Napa	Total
SR 12 Road Widening	28.54	34.93	**63.47**	18.88	15.68	**34.56**
Tight Diamond Alternative	0	17.72	**17.72**	0	6.29	**6.29**
Single Point Alternative	0	20.16	**20.16**	0	6.73	**6.73**

Impact –The proposed project will require partial acquisition along the roadway, in the form of narrow parcel strips/slivers, of sixty-six parcels (Table 2.1.3.2). The partial acquisitions would total to approximately 81 acres (Table 2.1.3.3 and Figures 2.1.3.1 and 2.1.3.2).

Five of the parcels identified for acquisition are under Williamson Act contracts. Ten additional parcels are classified under the FPPA as either/or prime farmland, unique farmland, and land of statewide or local importance (Table 2.1.3.4).

Due to the small size of the proposed acquisitions, production on all FPPA and Williamson Act parcels will not be adversely affected. Furtheremore, each right-of-way acquisition for this project is on the periphery of the agricultural properties; the proposed project will not divide or split the farmland of any owner. No significant acreage of farmland will become non-farmable because of interference with land patterns. Also, the project will not significantly reduce the demand for farm support services or change the current land use along Jameson Canyon Road.

Additional information about coordination with the Natural Resources Conservation Service (Form AD-1006) and the California Department of Conservation are in Chapter 3 and Appendix L.

Table 2.1.3.4

Potentially Affected Farmland Parcels

Assessor's Parcel No.	County	Prime Farmland	of Statewide Importanc	of Local Importanc	Unique Farmland	Grazing Lands	Williamson Act	**Utility Easement (Acres)	**Right-of-Way (Acres)	Parcel Size (Acres)
057140015	Napa	X	X	X				1.60	1.27	69
057140014	Napa	X		X				1.60	0.31	6.79
005714002	Napa	X		X				0.5	0.10	2
057140013	Napa	X		X				0.15	0.61	6.4
057080012	Napa/Sol	X		X	X	X		2.28	6.0	22.45
057080020	Napa	X			X			0.67	2.6	7.4
057080021	Napa	X			X			0.69	4.2	23.4
057070013	Napa	X		X				0.32	2.5	40.28
057070012	Napa		X	X				0	1.02	39.65
057020057	Napa	X	X	X				3.27	6.07	206.72
Subtotal								**11.08**	**24.68**	**355.09**
057080025	Napa						Contract# 33082	2.76	2.17	335.97
057080026	Napa						44985	.91	.25	155.7
148230050	Solano						1032	.95	.32	61.37
148230080	Solano						215	1	1.43	142.50
148260050	Solano						1087	0.95	5.43	45.28
148230010	Solano						1045	0.65		UNK
Subtotal								**7.22**	**9.6**	**740.82**
Total								**18.3**	**34.28**	**1095.91**

***Information provided by the Napa and Solano Co. Planning Offices unless otherwise indicated.**
****Caltrans Office of Right of Way Datasheets**
All other information provided by District 4's Office of System and Regional Planning

Avoidance, Minimization, and/or Mitigation Measures –No mitigation for farmland is proposed for the project. The project design is taking steps to accommodate the need of landowners for ingress and egress to their properties, both during construction and long-term.

Pages 44 to 46
Figures 2.1.3.1 and 2.1.3.2—Adjacent Parcels in Napa and Solano Counties and Figure 2.1.4.1—Census Tracts

2.1.4 COMMUNITY IMPACTS

Regulatory Setting- The National Environmental Policy Act of 1969 as amended (NEPA), established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. The Federal Highway Administration in its implementation of NEPA [23 U.S.C. 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion and the availability of public facilities and services.

Under the California Environmental Quality Act, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

Community Character and Cohesion

Affected Environment – The Jameson Canyon area consists of mostly rural and low density housing along SR 12 Jameson Canyon Road. Most of these homes are ranches of very large parcel sizes. The rest of the area is hilly, grazing terrain. To accommodate the proposed four lane highway, Caltrans requires acquision of additional right-of-way in the form of small narrow strips of land from the ranches and grazing land. No ranch homes in Napa or Solano County will require relocation.

The project study area falls within four Census tracts: 2522.01, 2522.02 (Solano County), 2010.01, and 2010.02 (Napa County). These census tracts are depicted in Figures 2.1.4.1 and 2.1.4.2, respectively. Table 2.1.4.1 summarizes, demographic data, income data, residential charactheristics, and housing inventory from the 2000 Census.

Population

ENVIRONMENTAL JUSTICE

Regulatory Setting – All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For year 2007, this was $20,650 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. The Department's commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix C of this document.

Impacts- The ethnic composition, poverty rates and income in Table 2.1.4.1, provides a profile of respondents within census tracts: 2522.01, 2522.02 (Solano County), 2010.01, and 2010.02 (Napa County) compared with the greater project region, Napa and Solano counties.

Census tracts 2522.01 and 2522.02 account for 3% of Solano County's minority population. Additionally, census tract 2522.01 has a comparable percentage, with only the Asian population exceeding 3% of the overall County's Asian population (12.7%). Census tract 2522.02's minority populations are just slightly higher when compared to the county's population. People of Hispanic origin makes up the largest minority group, 15.5%, compared the county's population of 6.4%.

Census tracts 2010.01 and 2010.02 account for 9% of Napa County's minority population. In census tract 2010.01, the Asian population is the largest minority group at 18.4% when compared to the County's 3.0%. The Asian population is also the highest minority group in census tract 2010.02, (7.8%).

The 1999 per capita incomes in census tracts 2522.01 and 2522.02, Solano County, are higher when compared to the county's as a whole; hence, the poverty rate is lower when compared to the county's. However, income data in census tracts 2010.01 and 2010.02, Napa County, show wages lower than the county median.

Table 2.1.4.1 Demographic Characteristics for Solano and Napa Counties

2000 census data	Solano County			Napa County		
		Census Tract			Census Tract	
		2522.01	2522.02		2010.01	2010.02
Total Population	**394,542**	**5,204**	**6,725**	**124,279**	**7,266**	**3,304**
Average Household Size	2.90	2.84	3.31	45,402	2,130	1,361
Number of Families	97,375	1,560	1,703	30,694	1,802	865
Persons per Family	3.33	3.05	3.57	3.16	3.57	3
Families: Households	74.7%	30.0%	25.3%	67.6%	24.8%	26.2%
Population Composition						
White	56.4%	76.2%	61.5%	80.0%	57.8%	68.7%
Black	14.9%	6.6%	10.4%	1.3%	7.0%	6.8%
Hispanic or Latino	17.6%	8.4%	15.5%	23.7%	17.3%	16.4%
American Indian/Alaskan	0.8%	0.5%	1.0%	0.5%	0.7%	1.3%
Asian	12.7%	9.0%	13.7%	3.0%	18.4%	7.8%
Asian Pacific Islander	0.8%	0.1%	0.5%	0.2%	1.6%	0.4%
Some Other Race	0.2%	2.6%	6.0%	10.9%	8.2%	8.4%
Two or More Races	4.5%	4.9%	7.2%	3.7%	6.2%	6.5%
Hispanic Origin	6.4%	8.4%	15.5%	23.7%	17.3%	16.4%
% Of Population with Income Below Poverty Level	**7.9%**	**5.9%**	**1.9%**	**7.9%**	**6.7%**	**18.2%**
People with Income Below Poverty Level	31,344	310	130	9,913	488	603
People with Income At or Above Poverty Level	347,087	4.80	6,559	109,672	2,868	2,205
Per Capita Income in 1999	$21,225	$38,567	$22,201	$26,719	$19,526	$18,827
People with Wage or Salary Income	110,221	1,540	1,912	35721	1030	870
No Wage or Salary Income	20,219	306	96	9674	285	288
% of Population Receiving Public Assistance	1.2%	0.8%	0.4%	9.2%	0.5%	2.5%
People with Public Assistance Income	5,083	46	27	1,149	40	85
People with no Public Assistance Income	125,357	1,800	1,981	44,246	2,087	1,283
% Owner Occupied	**33.0%**	**35.4%**	**29.8%**	**34.9%**	**18.0%**	**35.0%**
Owner Occupied Housing units	130,440	1,846	2,008	45,395	1,315	1,158
Vacant Housing Units	358	54	27	3,152	34	45
Median Home Value	$174,719	$351,500	$197,300	$276,596	$179,900	$52,700

Based on this analysis, there is no evidence that minority populations are a substantially higher percentage of the population in the census tracts surrounding the proposed project area than in Solano and Napa Counties as a whole. In one census tract in Napa, there is a slightly higher percentage of low-income population than the rest of the county. But, the population is not expected to be adversely affected by the proposed project.

Additionally, the proposed project would not require any residential or business relocations. The widened road would be within an existing, highway corridor. Although the new median barrier would create a minor impact to traffic circulation, the project would not constitute any new physical or psychological barriers that would divide, disrupt or isolate neighborhoods in the corridor. The proposed improvements would require both temporary and permanent acquisitions in the form of slivers of land on the periphery of private properties. Existing parking would not be affected. Private driveways that are affected by the roadway widening will be realigned where needed.

Based on the above discussion and analysis, the build alternatives will not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12898 regarding environmental justice.

2.1.5. UTILITY/EMERGENCY SERVICES

Utility

Seven types of utilities have been identified as being present in the project footprint. They are:

- North Bay aqueduct pipeline
- Fiber optic control cable
- Water utility line
- Overhead electricity
- Underground electricity
- Gas line
- Telephone line (AT&T)

These utilities are to be relocated as necessary to construct either of the build alternatives. All utility relocations will be within the environmental footprint of the proposed project. The potential impacts due to relocation of utilities have already been taken into account in the environmental impact assessments.

Public Services and Facilities

Police and Fire- There are no police stations and no fire stations in the local project region. There is, however, a California Department of Forestry/Napa County Fire Station located 0.7 miles west of the SRs 29/12 intersection just outside the Napa County Airport.

Hospital and Medical Facilities- There are no community medical facilities in the local project region.

2.1.6 TRAFFIC/TRANSPORTATION/PEDESTRIAN BICYCLE FACILITIES

Regulatory Settings- The Federal Highway Administration (FHWA) directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility. The Department and FHWA are committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

Traffic

Affected Environment- SR 12 is the major east-west regional corridor linking the residential housing of Solano County with local and regional employment areas and tourism in Napa County. The major north-south arterials adjoining the study area are SR 29 in Napa County, and I-80 in Solano County, which are at the western and eastern termini of the project, respectively.

IMPACT

The source for all the information about traffic is the traffic operations report, *OPERATIONAL ANALYSIS FOR THE SR-12 WIDENING PROJECT & ROUTE 12/29 INTERCHANGE (2007).*

Existing Travel Time and Peak Period Performance

Table 2.1.6.1 summarizes AM and PM peak period performance for SR 12 at the intersections of SR 29, North Kelly Road, Kirkland Ranch Road, and Red Top Road. The intersections operate at levels of service (LOS) E or F during one or both peak periods with the exception of SR 12/North Kelly Road, which operates at LOS D during the AM peak hour and LOS C during the PM peak hour, and SR 12/Kirkland Ranch Road, which operates at LOS B during the AM peak period and LOS A during the PM peak period.

The delay times per vehicle are also indicated in Table 2.1.6.1. The longest delays, 115.8 seconds, occur at the SRs 29/12 intersection.

Table 2.1.6.1: Existing Conditions – Intersection Peak Hour Levels of Service

Intersection	Control Type	Existing Conditions				LOS Standard
		AM Peak		PM Peak		
		Delay	LOS	Delay	LOS	
SR-12 / SR-29	Signal	115.8	F	67.1	E	C/D
SR-12 / North Kelly Road	Signal	37.4	D	32.8	C	C/D
SR-12 / Red Top Road	TWSC	(1)	F	206.9	F	C/D
SR-12 / Kirkland Ranch Road	Signal	11.4	B	9.0	A	C/D

Based on the 2000 Highway Capacity Manual
TWSC – Two-way Stop-controlled (LOS reported for worst case approach)
(1) Unsignalized intersection over capacity, delay not given.

Table 2.1.6.2 summarizes the existing conditions, peak hour, roadway levels of service. Both roadway segments currently operate at LOS E.

Table 2.1.6.2: Existing Conditions – Roadway Peak Hour Levels of Service

Roadway Segment	Peak Hour Volumes AM (PM)	AM Peak		PM Peak	
		Base % Time Spent-Following	LOS	Base % Time Spent-Following	LOS
SR 12 east of Red Top Road	2050 (2397)	91.3	E	92.9	E
SR 12 east of North Kelly Road	2414 (2567)	92.8	E	93.4	E

Based on the 2000 Highway Capacity Manual

Future Peak Period Performance

No Build Conditions

Table 2.1.6.3 summarizes the 203 No Build, peak hour, intersection levels of service. Under 2035 No Build conditions, delay is expected to increase significantly at the intersection of SRs 29/12. The delay at the intersection of SR 12/Kirkland Ranch Road also increases significantly in the AM peak period due to the increase in traffic along SR 12.

Table 2.1.6.3: 2035 No Build Conditions – Intersection Peak Hour Levels of Service

Intersection	2035 No Build			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
SR-12 / SR-29	321.5	F	290.5	F
SR-12 / North Kelly Road	29.6	C	23.0	C
SR-12 EB Ramps / Red Top Road	6.6	A	11.3	B
SR-12 WB Ramps / Red Top Road	24.6	C	11.6	B
SR-12 / Kirkland Ranch Road	99.9	F	11.0	B

Based on the 2000 Highway Capacity Manual
NB – northbound; SB – southbound; EB – eastbound; WB – westbound

Table 2.1.6.4 summarizes the 2035 No Build peak hour roadway levels of service. The operation of these roadway segments deteriorates from LOS E under existing conditions to LOS F under No Build conditions for both roadway segments and time periods.

Table 2.1.6.4: 2035 No Build Conditions – Roadway Peak Hour Levels of Service

SR-12 Roadway Segment	Peak Hour Volumes AM (PM)	2035 No Build			
		AM Peak		PM Peak	
		Base % Time-Spent-Following	LOS	Base % Time-Spent-Following	LOS
SR 12 east of Red Top Road	2,822 (2,574)	93.4	F	90.7	F
SR 12 east of North Kelly Road9	2,996 (3,045)	94.1	FF	94.4	F

Based on the 2000 Highway Capacity Manual

In 2035, some intersections under No Build conditions are expected to experience queuing problems:

- SRs 29/12: the northbound, eastbound, and westbound left turn storage bays do not provide sufficient storage.

- SR 12/North Kelly Road: the northbound left turn and right turn lane storage bays do not provide sufficent storage. Vehicles are anticipated to queue upstream beyond the intersection of North Kelly Road.

- SR 12/Kirkland Road: while the queue on the westbound approach does not extend past the upstream untersection, the queue is excessive.

Table 2.1.6.5 indicates that in the AM peak period in the year 2035, there will be a queue on the westbound I-80 connector to SR 12.

Table 2.1.6.5: 2035 No Build SR-12 / I-80 Connector Capacity Analysis

Description	Flow on Ramps		Flow on Mainline	
	Eastbound	Westbound	Eastbound	Westbound
	SR-12 to I-80	I-80 to SR-12	I-80	I-80
2035 No Build - AM Peak				
Hourly Volumes	1,042	1,780	5,305	10,602
Number of Lanes	1	1	4	4
Service Flow Rate	2,025	2,025	9,400	9,400
Capacity	0.51	0.88	0.56	1.13
Queue	0	0	0	1,202
2035 No Build - PM Peak				
Hourly Volumes	1,481	1,093	8,630	6,193
Number of Lanes	1	1	4	4
Service Flow Rate	2,025	2,025	9,400	9,400
Capacity	0.73	0.54	0.92	0.66
Queue	0	0	0	0

1 lane (45 mph Free Flow Speed) = 2,025 pc/hr/ln

Build Conditions

With the widening of SR12, Table 2.1.6.6 shows that the intersection of SR 12 and the ramps of Red Top Road and SR 12/Kirkland Ranch Road will operate at either LOS "B" or "C."

Table 2.1.6.6: 2035 Build – Intersection Peak Hour Levels of Service

Intersection	2035 No Build			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
SR-12 EB Ramps / Red Top Road	10.6	B	16.9	B
SR-12 WB Ramps / Red Top Road	18.9	B	10.9	B
SR-12 WB Ramps / Kirkland Ranch Road	28.0	C	16.1	B

Based on the 2000 Highway Capacity Manual
EB – eastbound; WB – westbound

Table 2.1.6.7 shows that the operations of SR 12 are LOS "D" between Red Top Road and North Kelly Road for both the AM and PM peak hours. Only the short segment of SR 12 between Red Top Road and I-80 will opearte acceptably at LOS "C."

Table 2.1.6.7: 2035 Build Conditions – Roadway Peak Hour Levels of Service

SR 12 Roadway Section	Peak Hour Volumes AM (PM)	2035 No Build			
		AM Peak		PM Peak	
		v/c	LOS	v/c	LOS
SR 12 east of Red Top Road	2,955 (3,148)	0.54	C	0.56	C
SR 12 east of Kelly Road	4,558 (4,428)	0.85	D	0.80	D

v/c – Volume-to-Capacity Ratio
Based on the 2000 Highway Capacity Manual

Under the Build situation, Table 2.1.6.8 shows that none of the connector ramps between I-80 and SR 12 will have queues.

Table 2.1.6.8: 2035 Build SR-12 / I-80 Connector Capacity Analysis

Description	Flow on Ramps		Flow on Mainline	
	Eastbound	Westbound	Eastbound	Westbound
	SR-12 to I-80	I-80 to SR-12	I-80	I-80
2035 Build - AM Peak				
Hourly Volumes	1,005	1,950	5,483	10,432
Number of Lanes	2	2	5	5
Service Flow Rate	4,050	4,050	11,750	11,750
Capacity	0.25	0.48	0.47	0.89
Queue	0	0	0	0
2035 Build - PM Peak				
Hourly Volumes	2,060	1,088	8,117	6,153
Number of Lanes	2	2	5	5
Service Flow Rate	4,050	4,050	11,750	11,750
Capacity	0.51	0.27	0.69	0.52
Queue	0	0	0	0

1 lane (45 mph Free Flow Speed) = 2,025 pc/hr/ln

For the SRs 29/12 Tight Diamond Interchange configuration alternative, the intersections of SR 12/SR 29 southbound ramps, SR 12/SR 29 NB ramps, and SR 12/North Kelly

Road will all perform at an acceptable LOS "A" to "C" in the AM and PM peak hours, except at SR 12/SR 29 southbound ramps in the PM peak hour, and SR 12/North Kelly Road in the AM peak hour.

Table 2.1.6.9: Tight Diamond Interchange – Intersection Peak Hour Levels of Service

Intersection	2035 No Build			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
SR-12 / SR-29 SB Ramps	29.8	C	54.9	D
SR-12 / SR-29 NB Ramps	15.0	B	8.1	A
SR-12 / North Kelly Road	60.0	E	17.0	B

Based on the 2000 Highway Capacity Manual
TWSC – Two-way Stop-controlled (Delay reported for worst case approach); AWSC – All-way Stop-controlled (Delay reported for worst case approach); NB – northbound; SB – southbound; EB – eastbound; WB – westbound

While the year 2035 queuing analysis focused on the SRs 29/12 interchange, Tight Diamond Alternative, the analysis inluded queuing at all of the study intersections. The results are:

- SRs 29/12 ramp intersections: no excessive queues are present and storage bays are sufficient.
- SR 12/North Kelly Road: the northbound left turn and right turn storage bays do not provide sufficient storage.
- SR 12/Red Top Road: the assumed tight diamond interchange configuration shows the northbound left turn and southbound right turn storage are exceeded at the westbound ramp intersection.
- SR 12/Kirkland Ranch Road: no excessive queues are present and storage bays are sufficient.

Table 2.1.6.10 shows that under the Single Point Urban Interchange configuration alternative, the operations of the intersection of SR 12/SR 29 ramps during the AM peak hour, and SR 12/North Kelly Road during the PM peak hour will be acceptable LOS "B" or "C." But, the SR 12/SR 29 ramps during the PM peak hour, and SR 12/North Kelly Road during the AM peak hour will have unacceptable LOS "D" or "E."

Table 2.1.6.10: Single Point Urban Interchange – Peak Hour Levels of Service

Intersection	2035 No Build			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
SR-12 / SR-29 Ramps	25.7	C	37.1	D
SR-12 / North Kelly Road	63.0	E	16.2	B

Based on the 2000 Highway Capacity Manual
NB – northbound; SB – southbound; EB – eastbound; WB – westbound

The year 2035 queuing analysis for the SRs 29/12 interchange, Single Point Urban Interchange Alternative, showed that:

- SRs 29/12 ramp intersections: no excessive queues are present; the lengths of the storage bays in Caltrans' conceptual designs are adequate.
- SR 12/North Kelly Road: the northbound storage bay does not provide adequate storage (similar to the Tight Diamond Alternative).
- SR 12/Red Top Road: the northbound left turn and southbound right turn storage are exceeded at the westbound ramp intersection.
- SR 12/Kirkland Ranch Road: no excessive queues are present and storage bays are adequate.

Minimization of Traffic/Circulation Impacts

The following are measures recommended in the *OPERATIONAL ANALYSIS FOR THE SR-12 WIDENING PROJECT & ROUTE 12/29 INTERCHANGE (2007)* to minimize traffic/circulation impacts.

SR-12 / North Kelly Road

Northbound Approach of North Kelly Road: Convert the northbound right turn lane on North Kelly Road to a shared through-right lane, and widen the north leg of the intersection to provide a second northbound receiving lane (with a 100 meter merge).

This measure improves the overall intersection level of service from LOS E (60.0 seconds / vehicle) to LOS D (44.4 seconds / vehicle) in the AM peak hour for the single point interchange option and improves from a LOS B (17.0 seconds / vehicle) to LOS B (15.5 seconds / vehicle) for the diamond interchange option. The v/c ratio will be 1.22 for diamond interchange and 1.00 for single point interchange.

Westbound Approach of SR-12: Add a westbound right turn lane approximately 180 to 200 meters in length with a 50 meter taper. The addition of this westbound right turn lane improves level of service; however, the right turn lane (even at 200 meters) does not exceed (and bypass) the westbound queue.

This measure improves the overall intersection level of service from LOS D (44.4 seconds / vehicle) to LOS C (22.1 seconds / vehicle) in the AM peak hour for the single point interchange option and improves from a LOS D (43.3 seconds / vehicle) to LOS C (23.6 seconds / vehicle) for the tight diamond interchange option. The v/c ratio will be 0.85 for diamond interchange and 0.89 for single point interchange. This measure requires additional widening of SR-12.

SR-29 / SR-12 Interchange (Tight Diamond Alternative)
Widen the SR-12 overcrossing to accommodate a second westbound left turn lane (westbound SR-12 to southbound SR-29 on-ramp) and widen the southbound on-ramp to accommodate two lanes and merging.

This improvement results in a LOS C (33.7 seconds / vehicle). While operationally superior, this modification requires providing a two-lane southbound on-ramp and substantially higher construction costs.

Transit
Transit Bus Service: There is no existing transit service on SR 12 connecting Fairfield and Napa. The VINE bus service in Napa County recently inaugurated an express bus service from Napa to Vallejo along SR 29.

Parking: Parking in the project area consists of off-street parking for commercial establishments, such as the three industrial parks surrounding the SRs 12/29 intersection in Napa County. There is a proposed park-and-ride facility at the intersection of Red Top Road and I-80, in Solano County south of SR 12 Jameson Canyon Road. This facility would primarily serve commuters in the I-80 corridor.

Pedestrian and Bicycle Facilities: The proposed project would be constructed in phases to match available funding. The first phase provides a 2.4 m (8 ft) outside shoulder along the eastbound direction of the highway. This outside shoulder will be signed and striped for an eastbound Class II bike lane (where possible, the outside shoulder of the existing facility will also be signed and striped for a westbound Class II bike lane).

During the second phase of the proposed project, the existing facility and its shoulders will be brought to current standards and striped as a westbound Class II bike lane.

In the last phase, the portion of the bike lane adjacent to eastbound SR 12 from the SRs 29/12 interchange to Kelly Road would be converted to a two-directional, Class I bike path. The portion of the bike lane adjacent to westbound SR 12 from Kelly Road to the SRs 29/12 would be terminated; to continue westbound, bicyclists would crossover Kelly Road to use the two-directional, Class I bike path adjacent to eastbound SR 12. Figures 2.1.6.1 through 2.1.6.15 show the ultimate bike facility for both alternatives for the proposed project as well as the proposed facilities for the Bay Area Ridge Trail and the San Francisco Bay Trail.

A traffic signal at the intersection of SR 12 and Red Top Road to allow bicyclists and pedestrians to cross SR 12 has been determined to be potentially feasible. This feature will be explored further for inclusion in the proposed project during final design.

Pages 60 to 74
Figures 2.1.6.1 to 2.1.6.15—Proposed Bicycle Facilities

2.1.7 VISUAL /AESTHETICS

Regulatory Setting - The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. To further emphasize this point, the Federal Highway administration in its implementation of NEPA [23 U.S.C. 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest, taking into account adverse environmental impacts including, among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities." [CA Public Resources Code Section 21001(b)]

SR 29 within the project area is an eligible State Scenic Highway. SR 12 is neither an eligible State Scenic Highway nor a County Scenic road.

Affected Environment- The Visual Analysis section follows the Federal Highway Administration (FHWA) Visual Impact Assessment methodology. The visual baseline of the proposed project was characterized in terms of the existing visual quality of the setting and the visual sensitivity of potential viewers. For the discussion of the Visual/Aesthetics aspect of this project, three landscape units have been established. This is based upon three criteria defined in the methodology: vividness, intactness, and unity. Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns. Intactness is the visual integrity of the natural or man-made landscape in the immediate environs and its freedom from encroaching elements. Unity is the degree to which the visual elements of the landscape join together to form a coherent, harmonious visual pattern. Both visual quality and viewer sensitivity were rated on a 5-point scale (Low, Low-to-Moderate, Moderate, Moderate-to-High, High). In this study, potential viewer exposure to anticipated visual change is considered as a component of viewer sensitivity.

The project visual setting is characterized below in terms of landscape units (discussed above), distinctive geographic segments with a broad unity of landscape character and visual quality.

The proposed project occupies three distinct landscape units.

Landscape Unit 1, Jameson Canyon, is a narrow east-west canyon connecting the northern San Joaquin Delta and Central Valley to the east with the Napa River and Napa Valley to the west, through low hills of the North Bay.

Landscape Unit 2 comprises agricultural and open space portions of the Fagan Creek/Napa River Floodplain.

Landscape Unit 3, the portion of the Napa River floodplain surrounding SR 29 in the vicinity of the SR 12/29 interchange and Napa Airport, is treated as a distinct landscape unit on the basis of its contrasting land use, urbanizing character, and correspondingly distinctive visual quality and sensitivity.

Landscape Unit 1: Jameson Canyon

This unit comprises a narrow, sparsely developed east-west canyon through the low North Bay hills that separate Green Valley, Cordelia Junction, the Central Valley, and the northern edge of the San Joaquin Delta to the east, and the Napa River floodplain and southern Napa Valley to the west. Views within the entire unit are restricted by steep, undeveloped, scenic slopes and ridges rising to over 300 m (roughly 1,000 ft.) to the north and south. Land-cover is predominantly open grassland, but a significant area of mixed evergreen forest is also prominent on slopes and drainages in the eastern half of the canyon south of the highway, several small drainages with accompanying oak riparian corridors cross the highway, and a narrow low-lying area of canyon bottom near the western mouth is planted in vineyards. A railroad track occupies the canyon bottom south of the highway and is occasionally visible though not prominent from the highway.

Development in the canyon is very sparse, consisting of a small number of farms and rural residences on large lots, concentrated mainly in the low-lying areas around Spurs and Miers Trails and the western portion of the canyon.

Visual quality throughout this relatively unspoiled and scenic landscape is high. Vividness and intactness of undeveloped hills, ridges, and woodland are high; legibility and overall unity of the natural pattern of grassland, wooded drainages, and narrow canyon topography is also high. See Figure 2.1.7.2 Landscape Unit 1.

The number of motorists on SR 12 within Jameson Canyon is moderately high. Both SR 12 and SR 29 are principal access routes from the central Bay Area to the Napa Valley. A

high proportion of motorists are thus tourists and recreational travelers, with higher than normal levels of scenic concern and expectation and thus, viewer sensitivity.

While SR 29, which is visually degraded, is listed as an eligible State Scenic Highway, SR 12 within Jameson Canyon, which is highly scenic and intact, is not listed as eligible or scenic by either the State or County. Overall, in the absence of public policy identifying Jameson Canyon as a scenic resource of concern, viewer sensitivity of motorists within this unit is considered to be moderate.

Views to the road are very low in number within Jameson Canyon, consisting of a small number of farms and rural residences on or near the highway within foreground distances. Typical of residential viewers with foreground visual exposure, these residents would be considered to have high sensitivity. No other sensitive land uses were identified within the corridor in Landscape Unit 1.

Landscape Unit 2: Napa River Floodplain to Kelly Road

The western side of Jameson Canyon opens onto the Napa River and Fagan Creek floodplains. Predominant image types in this area include vineyards and other agriculture, grassland, and the Chardonnay Golf Course to the south of the highway. Overall visual quality of this segment of the highway is moderately high. Vivid elements include views of undeveloped grassy hillsides and ridges to the north and south, tall Eucalyptus trees, and views of the golf course fairways to the south. Intactness is high. The area remains undeveloped except for the open space of agricultural fields and the golf course. Unity is also high. See Figure 2.1.7.3 Landscape Unit 2.

As in Unit 1 viewer sensitivity of motorists within Unit 2 is considered to be moderate. Off-road viewers within this unit are relatively few. One farmstead directly adjoins the highway west of Lynch Road. In addition, the Chardonnay Golf Course is located within the visual foreground of the highway through most of Unit 2. Recreational destinations, like residences, are typically regarded as having high viewer sensitivity. However, because most adjoining portions of the golf course are level with or lower than the roadway, it is not very visible from the golf course to the proposed project, but these constitute a tiny portion of the entire facility. Overall viewer response/sensitivity from the golf course is moderate.

Landscape Unit 3: SR 29 Corridor

West of the intersection of SR 12 with Kelly Road, the land use changes abruptly from the previous agricultural and open space to commercial and industrial uses along the urbanized SR 29 corridor. In the northeast quadrant of the SR 12/29 intersection, various light-industrial facilities adjoin the frontage of SR 29, separated from the highway by a landscaped buffer/setback of earthen berms and ornamental trees. An existing office complex is located to the southeast of the interchange, with vivid stands of mature live oaks in otherwise undeveloped, open portions of the SR 29 foreground. Immediately west of the intersection, to the north and south of Airport Boulevard, large level parcels remain open but are planned for industrial development in the near future. An east-west-oriented corridor of mature live oak trees delineates the boundary of the nearest open parcel to the southwest.

The sparse riparian vegetation of Sheehy Creek is visible but relatively inconspicuous in the open parcel to the northwest. Beyond these open parcels, both well-landscaped commercial development and unattractive industrial and warehouse uses are visible at distances of 0.4 km (0.25 mi.) or more. To the northwest, tall ridges of the Sonoma Mountains are visible in the background at distances of roughly 9.66 km (6 miles).

Overall, visual quality of this unit is moderately low. Vividness is moderate, with nearby hills and background mountains contributing vivid elements, but the visual foreground lacks visual interest, consisting mainly of empty fields and industrial buildings. Intactness and unity are low due to the dominance of the visually mixed commercial and industrial facilities surrounding the airport. See Figure 2.1.7.4 Landscape Unit 3.

The number of motorists on SR 29 and SR 12 is high. Like SR 12, SR 29 is a principal access route from the central Bay Area to the Napa Valley. A high proportion of motorists are thus tourists and recreational travelers, with higher than normal levels of scenic concern and viewer sensitivity. The interchange of the two highways is a key entry/gateway into the Napa Valley from three sources: SR 29, American Canyon, and the central and west Bay Area to the south; SR 12, the East Bay, I-5 and the Sacramento Valley to the east; and the Napa Airport to the west. In addition, SR 29 in this segment is listed as an eligible State Scenic Highway. Accordingly, despite the urban character and relatively poor visual quality of the SR 29 corridor, motorists' sensitivity is considered moderate.

The land uses in this unit, offices, industries etc.would be considered to have generally low viewer sensitivity due to the work-oriented nature of viewers' activities and the industrial zoning of the facilities.

Currently undeveloped portions of this landscape unit adjoining the project interchange are likely to be developed in the foreseeable future under the planned land use of the current County General Plan and the proposed cumulative projects known to the County. Land use planning and zoning for these parcels are industrial, and future viewer sensitivity to the road is therefore considered likely to be low.

The Visual Impact Analysis (VIA) technical report for this project provides details about the Scenic Highway Status for SR 29.

Visual Description of the Project

Major visual features of the proposed project would include:

Widening of SR 12 from the existing two-lane facility to four lanes with a concrete center median barrier, additional turn lanes, and acceleration and deceleration lanes in various locations.

Turn-arounds to accommodate acceleration and deceleration lanes at two center median openings, one in Napa County and one in Solano County, to provide local access after construction of the proposed center median barrier. Widening in these locations would constitute a total of seven lanes with acceleration, deceleration, and turn lanes, plus a 14 m (46 ft) wide turnout area to each side of the highway. The turnout at Lynch Road in Napa County would incorporate re-alignment of the Lynch Road intersection.

Road widening and the addition of turn lanes at three intersections as well as signalization at two of these. The widening and addition of turn lanes at intersections could represent a total of up to seven lanes at Kirkland Ranch and Lynch Roads, and eight lanes at Kelly Road.

Horizontal re-alignment, major cut-slopes, and construction of concrete cut-slope retaining walls up to 26 m (85 ft) in height beginning roughly 1.25 km (0.78 miles) from the eastern project terminus in Solano County. Upslope (cut) walls would be approximately 600 linear m (2,000 ft) in length; other fill-slope retaining walls in the same segment would be up to 15 m (50 ft) in height and approximately 800 linear m (roughly 0.5 miles) in length.

A major new interchange at SR12/29. SR 29 would maintain its four existing through lanes, at grade; SR 12 would accommodate its widened four lanes. Auxiliary lanes, ramps, turn lanes and detour lanes would also be added. Two interchange design alternatives, tight diamond and single point, are under consideration. Both interchange alternatives would elevate SR 12, with a combination of earthen berm embankments, MSE retaining walls, and concrete piers, with a two-span bridge over SR 29. Both alternatives would require re-alignments of SR 12 and Airport Boulevard.

Impacts- This section describes the anticipated visual impacts of the proposed project by landscape units 1,2,3 (detail discussions of units above). Under each landscape unit, impacts are organized by major visual project feature. Key viewpoints were selected within each landscape unit where these major project features/actions could potentially result in visual impacts. Computer-generated visual simulations were then prepared from each key viewpoint to provide a basis for evaluation of potential project impacts and are presented below. Visual simulations are based on proposed project alternatives as of March 2007 and do not reflect minor design revisions since that time.

Landscape Unit 1: Jameson Canyon

Widening of SR-12 and Addition of Center Median Barrier (Views from the Road). Four key viewpoints will be discussed. (Please see Figure 2.1.7.1: Proposed Landscape Setting)

Key Viewpoint 1 - Typical View from SR 12, Landscape Unit 1, Looking East – Figure 2.1.7.5a, (Existing Condition, Before); Figure 2.1.7.5b (After)

This viewpoint depicts visual effects of typical proposed roadway improvements, including widening from two lanes to four and addition of a 0.9 – 1.2 m (3 - 4 ft)-tall concrete center median barrier, as proposed throughout the project. In addition, widening to up to seven lanes due to the addition of turn and acceleration /deceleration lanes is proposed at two intersections and at one turnout in this landscape unit, as discussed below. The addition of two lanes and a concrete center median barrier, and associated increases in vehicle traffic, would result in an appreciable increase in the visual magnitude and dominance of the roadway in motorists' visual foreground. Without the recommended mitigation measures, the change could potentially have a substantial adverse impact.

In order to minimize this affect to visual quality, design treatments to the barrier to reduce reflectivity and reduce its apparent height and bulk are recommended. Substantial

revegetation of oak and other native species in the project right of way is also recommended to enhance vividness and intactness in the corridor visual foreground, as described in Avoidance Minimization and Mitigation Section.

Key Viewpoint 2- View of Proposed Turnout and Median Opening, Solano County - Ground View –Figure 2.1.7.6a, (Existing Condition); Figure 2.1.7.6b (Simulation)

In two locations, one in Landscape Unit 1 in Solano County and another in Unit 2 in Napa County, dominance of the highway would increase more than elsewhere due to new 14 m (46 ft) wide turnouts on each side of the highway to accommodate u-turn traffic at center median openings. The combined effect of auxiliary-lane widening and turnout construction in these two locations would be the creation of a 60 m (197 ft) -wide paved expanse at its widest point, with strong resulting visual dominance in those locations. Construction of the turnout in Unit 1 would also require a 7.6 m (24.9 ft)-tall cut-slope retaining wall on the north side of the road that would be prominently visible from the highway, as depicted in Figure (2.1.7.6b).

The height and hardscape character of this wall would contrast strongly with the natural setting, contributing to the increased dominance of the highway and an increase in urban character in its immediate vicinity. This would represent a localized adverse impact. The recommended mitigation is discussed in the Impact Minimization Section.

Encroachment on residences and associated decline in visual quality due to highway widening could occur in up to six locations within Landscape Unit 1. The VIA study provides further details.

Key Viewpoint 3- View of Horizontal Re-Alignment Segment - Aerial Overview – Figure 2.1.7.7a, (Existing Condition); Figures 2.1.7.7b, 2.1.7.7c (Simulation)

Key Viewpoint 4- View of Horizontal Re-Alignment Segment (Ground-Level View) - [Figure 2.1.7.8a, (Existing Condition); Figures 2.1.7.8b, 2.1.7.8c (Simulation)]

Roughly between 1300 and 1800 m (4,265 – 5,905 ft) west of the eastern project terminus in Solano County, the roadway would be horizontally re-aligned to conform to highway design standards. This re-alignment would require large cuts in the steep slopes adjoining the roadway to the north, with retaining walls of up to 26 m (85 ft.) in height and approximately 600 linear m (2000 ft) in length. Portions of the existing steep slopes are currently covered with protective netting to contain falling rocks and debris, lending portions of this segment a somewhat disturbed appearance.

These actions would result in major alterations to the existing view, including an increase in dominance of the roadway, major changes in landform, and introduction of prominent uphill, cut-slope retaining walls in the immediate roadway foreground view. The magnitude and dominance of the roadway in the immediate visual foreground would increase substantially, an adverse effect as depicted in Figures 2.1.7.7b, 2.1.7.7c, 2.1.7.8b and 2.1.7.8c; however, the opening of the view corridors to highly scenic foreground and middle-ground landscape elements, that are presently strongly filtered by existing roadside trees, would have a beneficial effect.

Thus, the decline in visual intactness, unity and overall visual quality in this segment would be partly off-set by an increase in vividness due to newly exposed scenic views. With appropriate wall design measures as recommended in the Impact Minimization Section, overall visual impact in this segment could be reduced to a moderate level.

Recommended design measures include the use of context-sensitive wall treatments with lower reflectivity, less strongly contrasting color, and more naturalistic and visually interesting texture than standard cast-in-place retaining wall designs, and the stepping of walls to reduce the height and visual scale of the wall as experienced by adjacent motorists. One potential context-sensitive wall treatment, a dry-stack stone texture, is depicted in Figures 2.1.7.7b and 2.1.7.8b. Figures 2.1.7.7c and 2.1.7.8c depict another potential option (simulated carved stone texture). Given an even split in public preference voiced in public comments regarding this project in September 2007, a "carved rock" texture is recommended for any upper tier cut-slope retaining walls; a "dry stack stone" texture recommended for the ground level cut-slope retaining walls, for consistency with the ground level walls planned for the Truck Climbing Lane project east of the project limits. Final wall design measures would be developed in coordination with County representatives.

In addition to up-slope retaining walls to the north, approximately 800 linear m (roughly 0.5 miles) of down-slope retaining walls of up to 15 m (50 ft) in height would be built in the same highway segment. Much of this portion of the existing highway is currently supported by retaining walls of similar scale. However, with the exception of the single Solano County residence discussed above under highway widening impacts to residents, these fill-slope walls would not be exposed to any sensitive viewers, and thus have negligible visual impact. Fill-slope wall construction would, however, result in considerable tree removal.

Throughout this segment of horizontal re-alignment of approximately 1.9 km (1.2 linear miles), numerous existing native live oak and bay trees would be removed to accommodate the roadway and retaining walls, primarily on the down-slope (southern) side of the highway. Nevertheless, the resulting overall effect on visual quality as seen from the road due to this tree loss is expected to be minor due to the opening of new scenic views and the resulting dominance and intactness of the surrounding scenic landscape as described above. If unique landmark trees were to be affected by the proposed project, the specific removal of such trees could constitute a decline in visual quality. However, no such unique landmark trees were identified along the existing highway shoulder.

Landscape Unit 2: Napa River/Fagan Creek Floodplain

Intersection Reconfiguration, Signalization and Addition of Lanes at Kirkland Ranch Road (Views from the Road). Two viewpoints, 5 and 6, will be discussed here.

The proposed widening and signalization at Kirkland Ranch Road and the entries to Chardonnay Golf Course and Kirkland Ranch Winery to the north of the highway are depicted in Figures 2.1.7.9a and 2.1.7.9b. The widening from four lanes to seven, the addition of a center median barrier, and the associated increase in numbers of vehicles would result in an increase in the magnitude and dominance of the roadway in the vicinity of the intersection. The increase in roadway dominance would represent a qualitative change in visual character in this location from a rural to a more urban, highway-dominated one, with a corresponding decline in visual intactness and overall visual quality. However, again, elements of the corridor landscape, notably the prominent vineyards, the golf course greens and landscaping, and the open hillsides and ridges would remain prominent and continue to dominate the focus of motorists' attention. With the implementation of the recommended measures to reduce visual intrusion of the median barriers and to enhance vividness and intactness through oak tree planting in various locations throughout the project right of way, the roadway widening, though adverse, would result in a moderate decline in overall visual quality.

Kirkland Ranch Road Intersection (Views to the Road)

The proposed widening would also require relocation of existing stone entry gateways to the adjacent winery north of the highway, thus resulting in a potentially adverse impact to the winery. Changes in the frontage at the Chardonnay Golf Course entrance would be minor—limited to 7 m (20 ft) encroachment into the existing lawns at the roadside.

The proposed increase in the scale of the intersection would represent a minor impact on views to the road from the adjoining winery and golf course.

Highway Widening and Center Median Barrier

The generic impacts of widening the highway and the addition of center median barriers within Landscape Unit 2 would be the same as discussed above under Landscape Unit 1. Design treatments to the barrier to reduce both reflectivity and its apparent height and bulk are thus recommended. Substantial revegetation of oak and other native species in the project right of way is also recommended to enhance vividness and intactness in the corridor.

With the implementation of the recommended median design measures, the increase in roadway dominance would represent a qualitative change in the corridor visual character to a more urban, road-dominated one, with a corresponding decline in visual intactness and overall visual quality. However, the scenic elements of the surrounding corridor would remain prominent and, with the recommended mitigation, the overall visual quality of views from the highway would remain moderately high. The VIA study report provides more details.

Key Viewpoint 6 - View of Turnout at Lynch Road, Napa County (Aerial Overview) Figure 2.1..7.10a Existing Condition; Figure 2.1.7.10b After

A second proposed turnout and un-signalized intersection reconfiguration at the median opening near Lynch Road are depicted in Figures 2.1.7.10a and 2.1.7.10b. This turnout would be less visually prominent than the other due to its location on more level terrain, which would not require a retaining wall. However, the overall roadway magnitude would be quite substantial approximately 53 m (174 ft) at the widest point as shown in this simulation.

A stand of very large eucalyptus would be removed at Lynch Road to accommodate the proposed turnout. In addition, other nearby eucalyptus roughly 200 m (656 ft) to the west would also be removed to accommodate road widening. As in Unit 1, although the removal of these trees would have a somewhat adverse effect, their removal would not in itself result in a net decline in existing visual quality from the road, which would remain high. Also as in Unit 1, visual exposure of motorists to the turnaround and interchange would be transient and brief. However, the combined effect of the greatly expanded roadway, the additional turnouts, and the tree and barn removal in this location would be a potentially strong overall decline in visual quality at this location.

In order to off-set this decline in visual quality from the combined highway widening and tree removal, replacement tree plantings and revegetation are recommended in the vicinity of the turnouts.

Impacts of Widening on Residences (Views to the Road)

Due to encroachment of the roadway and the removal of an existing barn and trees, visual intrusion of the highway on the residence west of Lynch Road would result in a strong decline in visual quality for those residents. To mitigate this potential impact, replacement tree screening at the highway shoulder is recommended in the frontage of this residence. In addition, affected residents may augment screening in areas outside the State right of way if desired.

Landscape Unit 3: SR 29 Corridor

SR 12/29 Interchange Alternatives

Two alternatives are under study for the SR 12/29 Interchange: Single Point or Tight Diamond. Both alternatives would elevate SR 12, with the existing four-lane SR 29 passing at grade beneath a new two-span bridge.

Key Viewpoint 7- SR 12/29 Interchange (Aerial Overview) –

(Figure 2.1.7.11a, Existing Condition; Figure 2.1.7.11b Simulation of Single-Point Interchange Alternative: Figure 2.1.7.11c Simulation of Tight Diamond Interchange Alternative)

In general, both alternatives, Single point Interchange design and Tight Diamond Interchange design would visually divide the wider interchange vicinity into four distinct visual quadrants due to the obstructing effects of the elevated ramp and bridge embankments. The interchange structure would become the visually dominant feature of the landscape within a radius of roughly 0.5 km (0.333 mi) or more, including the airport entry, altering the broad interchange setting to one with a strongly urban character with adverse effects on visual quality. The VIA study report provides more details.

Single-Point Interchange Alternative

In three quadrants, the appearance of the interchange from adjoining land uses would be defined primarily by the outer earthen embankments supporting SR 12, the new Airport

Boulevard/Airport entry, and the outer interchange ramps. In the northeast quadrant, the outer (westbound SR 12 to northbound SR 29) ramp would be supported by MSE retaining walls to accommodate the narrow ROW on frontages of existing industrial land uses east of SR 29.

Tight Diamond Alternative

Similar to the Single-Point Alternative, the appearance of the Tight Diamond Alternative from adjoining land uses would be defined primarily by the outer earthen embankments supporting SR 12, the new Airport Boulevard/Airport entry, and outer interchange ramps. In the northeast quadrant, the outer (westbound SR 12 to northbound SR 29) ramp would be supported by MSE retaining walls to accommodate the narrow right of way on frontages of existing industrial land uses east of SR 29; however, the alignment of this ramp under the Tight Diamond Alternative would be considerably closer to the adjoining industrial uses in the northeast quadrant, resulting in a more severe decline in visual quality for these viewers. These industrial uses, however, are considered to have low viewer sensitivity due to their land use and viewer activity types. Substantial adverse impacts are not anticipated for that reason.

Key Viewpoint 8- SR 12/29 Interchange (View from SR 29, Looking North)

[Figure 2.1.7.12a (Existing Condition); Figure 2.1.7.12b (Simulation of Single-Point Interchange Alternative); Figure 2.1.7.12c (Simulation of Tight Diamond Interchange Alternative)]

Single-Point Interchange Alternative

As shown in this figure, for north- and southbound motorists on SR 29, entry into the interchange would be characterized by visual enclosure by ramp embankments. Tree-covered ridges would remain visible in northbound views through much of the interchange. Visual quality within the interchange from SR 29 would thus be strongly influenced by the extent and quality of landscaping on the various earthen embankments, and by any architectural design enhancements applied to ramp and bridge structures and associated fixtures. North of the interchange bridge, views from SR 29 would be enclosed by tall vertical MSE retaining walls close to the roadway. The VIA study provides more details.

Tight Diamond Alternative

As shown in this figure, views within the interchange under the Tight Diamond Alternative would be visually enclosed as under the Single Point Alternative. The embankment areas within the interchange would be wider under the Tight Diamond Alternative. Views from SR 12 under the Tight Diamond Alternative would be almost similar to those under the Single Point Alternative. The signage and lighting support structures are likely to be slightly less dominant under the Tight Diamond Alternative. Overall, the Tight Diamond Alternative would be slightly superior visually to the Single Point Alternative due to the greater area of landscaped embankments in the interchange interior and the smaller quantity of concrete retaining walls.

Construction Impacts (All Landscape Units)

Both temporary and long-term visual impacts due to staging, demolition, grubbing, paving, and other construction activities would be anticipated as a result of the project, which could substantially impact motorists, residents, and businesses in some instances if not mitigated. Though temporary, some of these effects could last up to three years or more and represent substantial adverse impacts without mitigation.

Substantial construction-related visual disturbances in the foreground of the highway could have adverse impacts on motorists for the duration of the disturbance. Grubbing, if done without adequate controls, could result in unnecessary removal of trees or other major vegetation with potentially adverse effects in some instances. Demolition of roadway and relocated properties could have adverse effects on views to and from the road without adequate minimization efforts.

Most notably, if substantial fill stockpiles were introduced for later phases of construction, these could potentially have substantial adverse impacts on both motorists and adjacent land uses if not appropriately planned or mitigated.

Light and Glare Impacts (All Landscape Units)

Residences adjacent to the highway could potentially experience substantial adverse impacts from exposure to headlight glare as a result of the removal of existing roadside screening due to highway widening or CRZ (clear recovery zone) actions.

Nighttime construction could also result in adverse glare impacts to motorists and residences from construction lighting, without adequate measures to shield and direct such lighting.

Avoidance, Minimization, and Mitigation Measures- With implementation of the following measures, potential adverse project impacts would be reduced to less-than-significant levels in the long term. (See the following Tables 2.1.7.1.)

Pages 89 to 105
Figures 2.1.7.1—Landscape Units
2.1.7.2 to 2.1.7.4—Image Types in Landscape Units
2.1.7.5a and 2.1.7.5b—Existing and Simulated Views
2.1.7.6a to 2.1.7.6c—Existing and Simulated Views
2.1.7.7a to 2.1.7.7c—Existing and Simulated Views
2.1.7.8a to 2.1.7.8c—Existing and Simulated Views
2.1.7.9a and 2.1.7.9b—Existing and Simulated Views
2.1.7.10a and 2.1.7.10b—Existing and Simulated Views
2.1.7.11a to 2.1.7.11c—Existing and Simulated Views
2.1.7.12a to 2.1.7.12c—Existing and Simulated Views

Table 2.1.7.1 Avoidance, Minimization, and Mitigation Measures by Landscape Unit

Source of Impact	Impact	Avoidance, Minimization, and Mitigation Measures	Corresponding Figures*
Landscape Unit 1: Jameson Canyon			
Highway Widening and Addition of Center Median Barrier (Views from the Road)	Change in corridor to a more urban visual character, moderate decline in visual quality due to increased roadway dominance from typical widening and median barriers.	Mitigation Measure VM-1: Architectural design treatment of center median barriers to decrease visual mass, reflectivity and color contrast. Mitigation Measure VM-2: Oak tree mitigation planting/ revegetation in project ROW throughout project corridor	Figures 2.1.7.5a, 5b Figures 2.1.7.7a, 7b
	in combination with grade-separation MSE retaining walls	Mitigation Measure VM-3: Architectural design measures for MSE grade-separation walls	
	at proposed median opening/ turnout	Mitigation Measure VM-2b: Oak tree mitigation planting/ revegetation in project ROW; concentrated planting of oak and other native vegetation adjoining turnouts Mitigation Measure VM-4: Architectural design measures for turn-out cut-slope retaining walls	Figures 2.1.7.6a, 6b
Highway Widening Impacts on Residents (Views to the Road)	Encroachment of highway, removal of landscape screening in residential frontages adjoining highway due to project CRZ clearing Encroachment at residence 900 m west of eastern project terminus	Mitigation Measure VM-5a: Replacement planting within proposed new project ROW Mitigation Measure VM-5b: Mitigation for Wall Construction Impacts to Residents - Replacement planting and architectural design measures for retaining wall	-- --
Highway Re-alignment, Major Landform Alteration, and Cut- and Fill-slope Retaining Wall Construction	Increase in dominance of the roadway, major changes in landform, and introduction of prominent uphill, cut-slope retaining walls in the immediate roadway foreground view	Mitigation Measure VM-6: Context-sensitive cut-slope retaining wall design measures to be developed in coordination with local jurisdictions. A "carved rock" texture is recommended for any upper tier cut-slope retaining walls; a "dry stack stone" texture recommended for the ground level cut-slope retaining walls, for consistency with Truck Climbing Lane project east of the project limits.	Figures 2.1.7.7a, 7b, 8a, 8b

Table 2.1.7.1 Avoidance, Minimization, and Mitigation Measures by Landscape Unit

Source of Impact	Impact	Avoidance, Minimization, and Mitigation Measures	Corresponding Figures*
Landscape Unit 2: Napa River Floodplain to Kelly Road			
Intersection Reconfiguration, Signalization and Addition of Lanes at Kirkland Ranch Road (Views from the Road)	Increase in magnitude and dominance of the roadway due to increase from 4 to 7 lanes, addition of center median barrier, increase in vehicles with corresponding decline in visual intactness and quality.	Mitigation Measure VM-1: Architectural design treatment of center median barriers to decrease visual mass, reflectivity, and color contrast. Mitigation Measure VM-2: Oak tree mitigation planting/ revegetation in project ROW throughout project corridor.	Figures 2.1.7.9a, 9b
Kirkland Ranch Road Intersection **(Views to the Road)**	Removal of existing stone entry gateways to the adjacent winery	Mitigation Measure VM-7: Relocation of entry gateway as part of the project right-of-way acquisition process.	Figures 2.1.7.9a, 9b
Highway Widening and Center Median Barrier (Views from the Road)	Change in corridor to a more urban visual character, moderate decline in visual quality due to increased roadway dominance from typical widening and new median barriers. at proposed median opening/ turnout; removal of large Eucalyptus stand	Mitigation Measure VM-1: Architectural design treatment of center median barriers to decrease visual mass, reflectivity and color contrast. Mitigation Measure VM-2: Oak tree mitigation planting/ revegetation in project ROW throughout project corridor. Mitigation Measure VM-2b: Oak tree mitigation planting/ revegetation in project ROW; concentrated planting of oak and other native vegetation adjoining turnouts.	Figures 2.1.7.5a, 5b
Impact of Widening on Residences (Views to the Road)	Visual intrusion of the highway on the residence west of Lynch Road due to encroachment of the roadway and removal of an existing barn and trees	Mitigation Measure VM-5a: Replacement planting within proposed new project ROW Mitigation Measure VM-8: Replacement and mitigation tree screening in the project ROW shall be implemented in the frontage of the affected residence. Mitigation Measure VM-2b: Oak tree mitigation planting/ revegetation in project ROW; concentrated planting of oak and other native vegetation adjoining turnouts.	Figures 2.1.7.10a, 10b
Landscape Unit 3: SR 29 Corridor			

Table 2.1.7.1 Avoidance, Minimization, and Mitigation Measures by Landscape Unit

Source of Impact	Impact	Avoidance, Minimization, and Mitigation Measures	Corresponding Figures*
SR12/29 Interchange Alternatives	Decline in visual quality of vicinity due to interchange construction; to enhance gateway function and community image	Mitigation Measure VM-9: Revegetation of SR 12/29 Interchange. Substantial revegetation with oak and other native species on both interior and exterior interchange embankments to create a landscape buffer between the interchange structure and surrounding land uses, to enhance the gateway image of the interchange, and to enhance vividness and intactness within the interchange. Mitigation Measure VM-10: Architectural and landscape design enhancement of SR 12/29 Interchange.	Figures 2.1.7.11a, 11b, 11c Figures 2.1.7.12a, 12b, 12c
Construction Impacts (All Landscape Units)	*Temporary and long-term visual impacts due to paving and other construction activities, staging, grubbing and demolition* *Visual impact from substantial spoil storage in viewshed*	Mitigation Measure VM-11: Construction Mitigation Measures Cleaning and grubbing shall only occur within excavation and embankment slope limits as identified during project design. Existing vegetation outside of cleaning and grubbing limits shall be protected from the contractor's operations, equipment and material storage. Unsightly material and equipment storage shall not be visible within the foreground of the highway. Where such siting is unavoidable, material and equipment shall be visually screened. Construction, staging, and storage areas shall be screened by visually opaque screening whereever they will be exposed to public view for extended periods of time. All areas disturbed by construction, staging and storage shall be revegetated immediately following completion construction. - Fill stockpiles, if required, shall be sited outside of the visual foreground of SR 12.	There are no figures related to construction impacts.